EASLEY BRIDGE
(Poplar Street Bridge)
Spanning the Norfolk Southern Corporation railroad tracks on Poplar Street
Bluefield
Mercer County
West Virginia

HAER No. WV-64

HAER WVA, 28-BLUFD, 1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Northeast Region
Philadelphia Support Office
U.S. Custom House
200 Chestnut Street
Philadelphia, P.A. 19106

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Location: Spanning the Norfolk Southern Corporation railroad tracks, on Poplar Street Bluefield, Mercer County, West Virginia

USGS Bluefield, West Virginia Quadrangle, 1:24,000
UTM: 17.478710.4124018

Date of Construction: 1936

Architect: Unknown

Manufacturer: Virginia Bridge Company, Roanoke, Virginia

Erected By: T. A. Livingston & Co., Goldsboro, North Carolina

Present Owner: West Virginia Department of Transportation, Division of Highways
Charleston, West Virginia 25305

Present Use: The two-lane bridge presently is open to vehicular and pedestrian traffic but is scheduled for removal and replacement.

Significance: The 14-span Easley Bridge is representative of the many mid-scale urban bridges built throughout West Virginia during the first half of the twentieth century which emphasized reduced material requirements and increased load-handling capacities. The Easley Bridge played a role within the region's expanding economic network by improving access along U.S. Route 52, the old Huntington-Bluefield Road, and contributing to Bluefield's continuing importance as southern West Virginia's primary economic entrepot. The bridge is also important for its association with Frank Smoot Easley, a prominent local citizen and civic leader in Bluefield. As head of the Good Roads Committee of the Bluefield Chamber of Commerce and later, as chairman of the West Virginia Turnpike Commission, Easley played an important role in improving the state's transportational infrastructure.

Project Information: This documentation was conducted on behalf of the West Virginia Department of Transportation, Division of Highways, Charleston, West Virginia, in the spring of 1997. The recordation was conducted as part of the statewide bridge replacement and upgrading program and as a mitigative measure, prior to the removal and replacement of the existing Easley Bridge.

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October 6, 1997

Summary Description of Bridge and Setting

The Easley Bridge is located along U. S. Route 52 in the City of Bluefield, Mercer County, West Virginia and spans both U. S. Route 19 and the tracks of the Norfolk Southern Corporation (formerly the Norfolk and Western Railway Company). The heavily traveled vehicular and pedestrian bridge was built in 1936 to provide improved access between Bluefield Avenue and areas north of the Norfolk and Western tracks. The present, two-lane, overhead highway bridge replaced an earlier, one-lane undergrade culvert that previously carried automotive traffic in the general vicinity (WV State Road Commission 1936a). The Easley Bridge has an overall length of 789 feet 4 inches (241 meters), measured from the backwalls of the northern and southern abutments. The bridge has a 32-foot (9.75 meter) wide, asphalt-paved, reinforced concrete roadway and a five-foot wide sidewalk along its eastern side. The bridge consists of 13 rolled steel T-beam reinforced concrete spans (Spans 1, 2, and 4-14) and a single 119-foot (36 meter) long steel riveted pony truss span (Span No. 3) which carries traffic over the Norfolk Southern Corporation railroad tracks. Except for steel handrails along the length of the pony truss, bridge railing is of reinforced concrete. The spans of Easley Bridge are supported by 13 open-column reinforced concrete piers. These include both four-column and two-column piers that rest upon concrete footings. The northern bridge abutment is a stub-type, plain, concrete gravity wall abutment employing minimal steel reinforcement. The full height southern abutment is reinforced concrete with U-shaped wingwalls. It rests upon reinforced concrete stepped spread footings.

Except for the steel pony truss at Span 3, the Easley Bridge consists of five reinforced concrete T-beams of varying depths which run longitudinally beneath the deck of Spans 1, 2 and 4 through 14 and by perpendicular reinforced concrete T-beams. Additional support is provided by several segmented arches in the piers of these spans.

The riveted steel pony truss comprising Span 3 consists of 10 panels each measuring 9 feet, 9-1/2 inches, and two end panels. The northern and southern end panels measure 10 feet 11-11/16 inches and 8 feet 7-5/16 inches long, respectively. The upper chord of the truss span is formed from 18-inch deep channels joined by 24-inch wide cover plates. The lower chord consists of 18-inch deep channels. Truss verticals range in length from 10 to 15 feet and are formed from 14-inch wide flange shapes of varying weights. The steel diagonals and other web components of the pony truss at Span 3 are fastened mainly with rivets, although threaded bolts and hex fasteners are also used on the diagonal support members. The floor system along Span 3 is framed into the lower chord of the truss and consists of 36-inch deep floor beams positioned at 9 feet 9-1/2 inches. Lateral bracing beneath the bridge deck provides torsional strength along the bridge's horizontal plane.

The Easley Bridge originally contained three bridge plaques, of which only two remain. The third plaque, bearing the legend "Frank S. Easley Bridge-1939" was formerly situated at Span 10 but was recently stolen (Eva and Tyler Easley, personal communication 1997). One of the two surviving metal plaques is situated along the eastern inner parapet wall. Along with the state seal, it lists the Easley Bridge's official bridge number (Bridge No. 1405) and records the 1936 bridge construction date. The second plaque is affixed to the northeastern portal of the steel pony truss and reiterates the

1936 construction date. It indicates that the truss span was fabricated by the Virginia Bridge Company of Roanoke, Virginia and erected by the T. A. Loving Company of Goldsboro, North Carolina.

Although detailed maintenance records for the Easley Bridge are unavailable, files at the West Virginia Department of Transportation, Division of Highways indicate that new bridge lighting fixtures and a 5-inch pipe and electrical control cable for the nearby Betsy Ross Bakeries were installed on the structure during the early 1960s. More recent alterations include several repairs to the bridge deck, the replacement of rivets, and repair of a bridge bearing at Pier 2, all within the past six years (Baker 1991, 11; Boyd, personal communication 1997). Visual inspection of the Easley Bridge suggests that its basic structural configuration has not changed substantially since its construction in 1936. The overall visual condition of the bridge is poor to fair, due to extensive deterioration of both concrete and steel components. This includes concrete exfoliation on several concrete piers and penetrating rust through several steel truss members of Span 3. Due to its extensive deterioration, the bridge is scheduled for replacement through the West Virginia statewide bridge replacement and upgrading program.

The Easley Bridge employs both traditional nineteenth century steel truss technology as well as twentieth century reinforced concrete materials. Originally designed as a 14-span, all-concrete structure, design specifications were altered in 1935 at the request of Norfolk and Western Railway engineers to include a steel pony truss over existing trackage at Span 3. According to written communications by W. P. Wiltsee, Chief Engineer of the Norfolk and Western Railway Company with L. L. Jamison, Bridge Engineer of the State Road Commission of West Virginia, the adoption of a steel pony truss over the Norfolk and Western tracks would provide better resistance to corrosion from locomotive gases and fumes (Wiltsee 1935).

The construction of the Easley Bridge in 1936 occurred during the height of the Norfolk and Western Railway Company's importance in both the local and regional economy. Since its inception during the 1880s, the Norfolk and Western has played a pivotal role in the economic and technological transformation of the Bluefield area from a small agricultural hamlet to the main economic center of southern West Virginia. Historic settlement in Mercer County and the Bluefield vicinity dates to the 1780s and was stimulated by the availability of fertile soils, abundant timber, and hydropower from the many tributaries of the New River. Throughout most of the nineteenth century, most area inhabitants were either farmers or otherwise involved in providing goods and services to the rural agrarian population. This situation changed during the early 1880s, when Bluefield's traditional agricultural economy was radically transformed by both the development of the Pocahontas coal fields in nearby Pocohantas, Virginia, and by the 1881 surveying of what later became the Norfolk and Western Railway's access line from the coalfields into Bluefield, then known locally as the John B. Higginbotham Farm, Higgenbotham's Summit, or Beaver Pond Springs. In 1884, the area that would become Bluefield was just a Norfolk and Western flag station on the Higgenbotham Farm, consisting of a single line of track, and a short parking space capable of handling an engine and three to four railcars. Throughout the 1880s, the Norfolk and Western Railroad Company undertook a major program of constructing railroad support and maintenance facilities at Higgenbotham's Summit, which was favored because its elevation of 2,557 feet above sea level was the highest point along the Main Line between Columbus, Ohio, and Norfolk, Virginia, and permitted gravity switching in either direction (McCormick 1957, 71). This construction led to a period of rapid population growth and urban development including the establishment of a post office in 1886, and an expanding base of

stores and businesses to support the burgeoning population. These latter included the Bluefield Telephone Company (1893), the Bluefield Hardware Company (1898), and several banks by 1903. By 1885, the population had reached approximately 500 and by 1890, it had increased to 600. By 1889, the new settlement at Higgenbotham's Summit had become the largest city in Mercer County and was incorporated as the City of Bluefield that year. During the subsequent decades, the pace of settlement and urban growth accelerated, reaching a total of some 4,644 persons by 1900 and 11,188 by 1910 (Mercer County Historical Society 1984, 17-18; Rankin 1976, 3 and 10; Callahan 1913, 219).

From the advent of coal and coke production in the early 1880s until the decline of production during the 1950s, the economic fortunes of Bluefield were tied directly to the extraction and shipment of coal from the nearby Pocohantas fields. The Norfolk and Western Railroad shipped its first carload of coal from mines operated by the Southwest Virginia Improvement Company in March, 1883, transporting a total of 100,000 tons that year. During the subsequent decades, numerous other coal and coke concerns were established in Bluefield including the Bluefield Coal & Coke Company, headed by Frank S. Easley, who remained with the company from the time of its establishment in 1914 until its liquidation in 1950. By 1929, annual production at the Pocohantas fields had grown to over 30 million tons. Peak coal production occurred in 1943, when 54 million tons were shipped, in large part to fuel America's wartime industrial production. By 1948, coal shipments on the Norfolk and Western had declined to approximately 15 million tons annually (Mercer County Historical Society 1984, 33; Rankin 1976, 19).

The construction of the Easley Bridge in 1936 by the State Road Commission of West Virginia (now the West Virginia Division of Highways) took place during a period of national and local economic depression which led to severe cutbacks in local government services. Despite these cutbacks, several public improvement projects took place during the 1930s, including the Easley Bridge and modern sewage treatment facilities for the Bluefield vicinity. Construction of the Easley Bridge was carried out under the Emergency Relief Appropriation Act of 1935, with monies provided by President Roosevelt's Works Program Highway Funds. According to a March 1936 agreement between the Road Commission and the City of Bluefield, the Easley Bridge was to provide for the relocation and improvement of U.S. Route 52 and the separation of highway and railroad grades via a new overhead highway bridge that would carry both vehicular and pedestrian traffic over and across the right-of-way of the Norfolk and Western Railway at Poplar Street (WV State Road Commission 1936b).

In January of 1939, the newly completed Poplar Street Bridge was formally designated as the Frank S. Easley Bridge by an act of the West Virginia House of Delegates, the first time in the state's history that a bridge was named for a person still living (Eva and Tyler Easley, personal communication 1997). This honor was in recognition of Easley's long-term efforts to improve local and regional transportation, including his service as head of the Good Roads Committee of the Bluefield Chamber of Commerce and later, his work as chairman of the West Virginia Turnpike Commission.

As a mainly concrete bridge, the Easley Bridge was part of a general evolutionary trend in bridge design that emphasized reduced material requirements and stronger, improved weight-bearing capabilities. Steel-reinforced concrete bridges gradually replaced many of the nation's all-metal truss bridges, which had been favored during the mid-nineteenth and early twentieth centuries. The popularity of these all-metal truss bridges was due to the fact that they could be constructed easily,

cheaply, and required no specialized skills. Their cost and simplicity were especially attractive to small municipalities (PHMC 1986, 9, 109, and 126). Similar factors contributed to the subsequent popularity of concrete bridges. These advantages included low initial maintenance costs, the availability of local construction materials, such as sand and gravel, the relative permanence of concrete, and the fact that they could be built by relatively unskilled workers (Jackson 1988, 37; Plowden 1974, 299).

The nation's first plain concrete arch bridge was constructed in Prospect Park, Brooklyn, New York in 1871. Like bridges made of stone, such plain unreinforced concrete bridges possess great compressive strength but exhibit poor tensile characteristics. In 1889, reinforced concrete was first employed in an effort to increase the structural solidity and weight-bearing capacity of a concrete arch bridge in Golden Gate Park, San Francisco (Plowden 1974, 297-8; PHMC 1986, 157). The use of embedded steel reinforcements represents an historical engineering response to the inherent tensile weakness of plain cement/concrete bridges. Although specific local conditions in Bluefield led to a bridge design that included both a steel truss span as well as use of reinforced concrete materials, the Easley Bridge is representative of many reinforced concrete bridges built during the early twentieth century in response to the region's expanding economic network and increasing transportation requirements.

In summary, the Easley Bridge is significant as a representative example of the many reinforced concrete automotive bridges built across West Virginia and surrounding states during the first half of the twentieth century to facilitate efficient transportation within the state's emerging highway system. Construction of the bridge in 1936, along with the region's expanding road system and the ongoing operations of the Norfolk and Western Railway, contributed to Bluefield's continuing role as the main economic center for southern West Virginia. The construction of the bridge in 1936 occurred as part of an evolutionary trend in bridge design that sought to improve the strength, ease of construction, and cost-effectiveness of railroad and highway bridges, using lighter and stronger materials. The bridge is also important for its legislatively-recognized association with Frank S. Easley, former chairman of the West Virginia Turnpike Commission, who played an important public role in improving the state's transportation infrastructure during the early part of the twentieth century.

SOURCES OF INFORMATION AND OTHER REFERENCES

A. Engineering Drawings

West Virginia State Road Commission

1936a Construction Agreement for the Poplar Street Bridge in the City of Bluefield, West Virginia, dated March 26, 1936. Copy on file, West Virginia Department of Transportation, Division of Highways, Charleston.

1936b Construction Agreement for the Poplar Street Bridge in the City of Bluefield, West Virginia, dated March 18, 1936. Copy on file, West Virginia Department of Transportation, Division of Highways, Charleston.

1936c Revised Situation Plan, Showing Truss Span at Span No. 3. Original on file, West Virginia Department of Transportation, Division of Highways, Charleston.

1936d Original Elevation and Plan View of Piers 3-7. Original on file, West Virginia Department of Transportation, Division of Highways, Charleston.

1936e Original Elevation and Plan Views of Piers 1-3. Original on file, West Virginia Department of Transportation, Division of Highways, Charleston.

B. Historic Views

Western Elevation of Easley Bridge, Dated March 11, 1937. Photographer Unknown. Original 4 x 6 inch Negative on File, West Virginia Department of Transportation, Division of Highways, 1900 Kanawha Boulevard East, Charleston WV 15305-0430.

Southern Bridge Approach of Easley Bridge, Dated April 14, 1938. Photographer Unknown. Original 4 x 6 inch Negative on File, West Virginia Division of Highways, Charleston.

View Across Traffic Level Dated April 14, 1938. Photographer Unknown. Original 4 x 6 inch Negative on File, West Virginia Division of Highways, Charleston.

Span No. 3 (Truss Section) Under Construction On April 14, 1938. Photographer Unknown. Original 4 x 6 inch Negative on File, West Virginia Division of Highways, Charleston.

Eastern Bridge Elevation From Bluefield Avenue, Dated April 14, 1938. Photographer Unknown. Original 4 x 6 inch Negative on File, West Virginia Division of Highways, Charleston.

C. Interviews

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Easley, Eva and Tyler
1997 Interview on April 25, 1997 at Their Residence in Bluefield, West Virginia Regarding the Association of the Easley Bridge with Frank S. Easley. The Interview also Included a Review of Easley Family Records.

D. Institutional Sources

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Pennsylvania Historical and Museum Commission (PHMC)
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7.5 Minute Series Topographic Map: Bluefield, W. VA-VA Quadrangle, 1962. Photorevised 1979.

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Wiltsee, W. P.
Letter to L. L. Jamison, Bridge Engineer for the State Road Commission of West Virginia, dated May 21 1935. Copy on file, West Virginia Department of Transportation, Division of Highways, Charleston, 1935.

Note: Five historic photographs of the Easley Bridge were located during this recordation and are on file at the West Virginia Division of Highways in Charleston. These are referenced in Section B/Historic Views, above.

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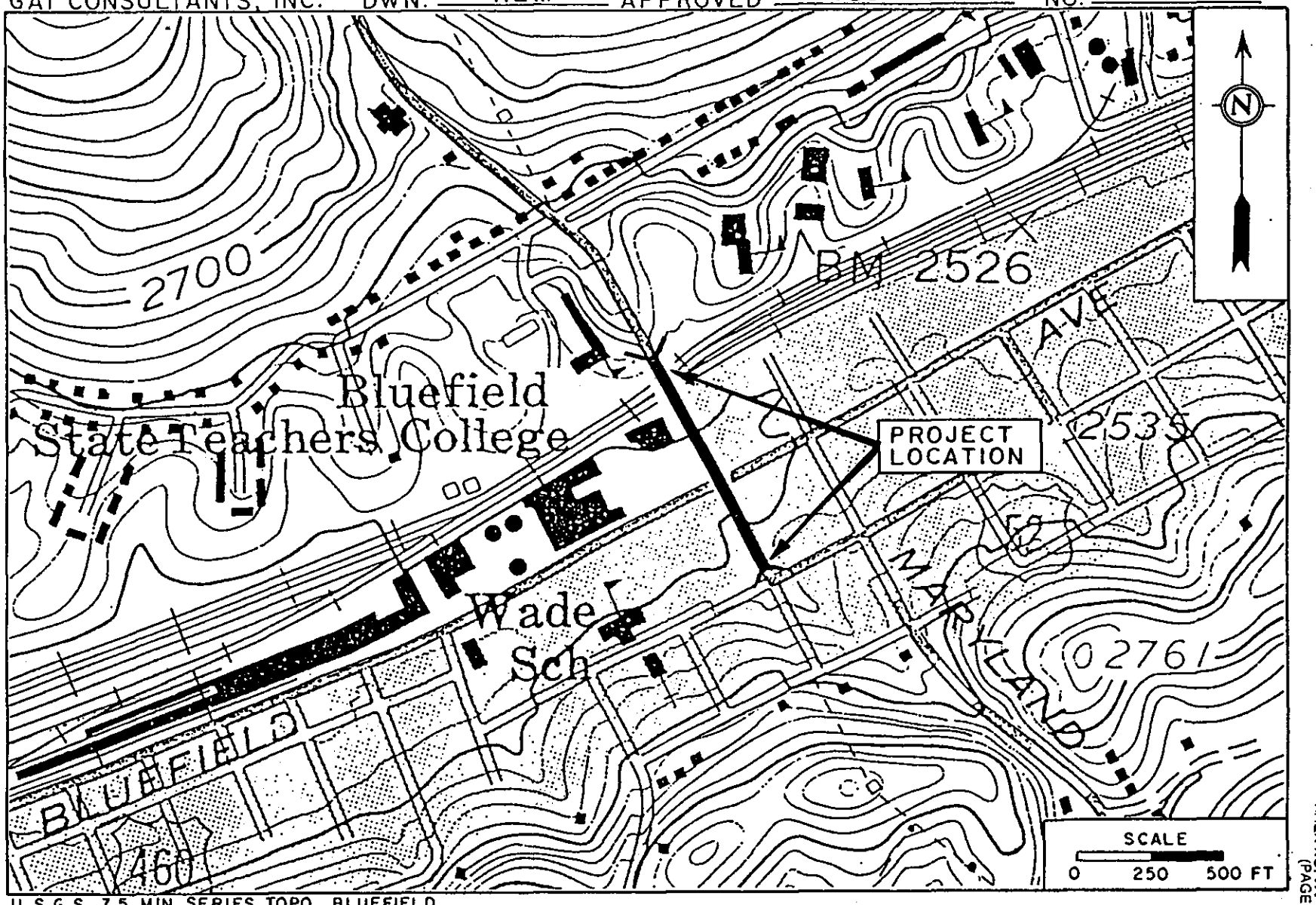

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